

Appl. No. 09/927,320
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-31. (Canceled).

32. (New) A metal-insulator-semiconductor device comprising:

a first drain region;

a body region disposed on a first surface of said first drain region;

a gate region extending through said body region and partially into said first drain region;

a source region disposed between a first portion of said body region and a first portion of said gate region;

a first insulative layer disposed between said source region and said first portion of said gate region and between said body region and a second portion of said gate region, wherein said first insulative layer has a first thickness; and

a second insulative layer disposed at least partially between a first portion of said first drain region and a third portion of said gate region and adjacent to said first insulative layer, wherein said second insulative layer has a second thickness that is greater than said first thickness and wherein said second insulative layer is not formed by oxidizing said first drain region.

Appl. No. 09/927,320
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

33. (New) The metal-insulator-semiconductor device according to Claim 32, wherein said gate region comprises polysilicon.

34. (New) The metal-insulator-semiconductor device according to Claim 32, further comprising a highly conductive region of formed in said first drain region adjacent said third portion of said gate region.

35. (New) The metal-insulator-semiconductor device according to Claim 32, wherein said first insulative layer comprises an oxide.

36. (New) The metal-insulator-semiconductor device according to Claim 32, wherein said second insulative layer is selected from the group consisting of phosphosilicate glass and borophosphosilicate glass.

37. (New) The metal-insulator-semiconductor device according to Claim 32, wherein a thickness of said second insulative layer is in the range of approximately 0.1 to 0.3 μm .

38. (New) The metal-insulator-semiconductor device according to Claim 32, wherein a thickness of said first insulative layer is in the range of approximately 100-1000 Å.

Appl. No. 09/927,320
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

39. (New) The metal-insulator-semiconductor device according to Claim 32, wherein said second insulative layer does not introduce substantial stress in said first drain region.

40. (New) A metal-insulator-semiconductor device comprising:
a first drain region;
a body region disposed on a first surface of said first drain region;
a gate region extending through said body region and partially into said first drain region;
a source region disposed between a first portion of said body region and a first portion of said gate region;

an oxide layer disposed between said source region and said first portion of said gate region, between a second portion of said body region and a second portion of said gate region and between a first portion of said first drain region and a third portion of said gate region, wherein said oxide layer has a first thickness; and

an insulative layer, selected from a group of material consisting of phosphosilicate glass and borophosphosilicate glass, disposed between a second portion of said first drain region and a fourth portion of said gate region and coupled to said oxide layer, wherein said insulative layer has a second thickness that is greater than said first thickness.

41. (New) The metal-insulator-semiconductor device according to Claim 40, wherein said first drain region comprises a semiconductor of a first conductive type.

Appl. No. 09/927,320
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

42. (New) The metal-insulator-semiconductor device according to Claim 40, wherein said body region comprises a semiconductor of a second conductive type.

43. (New) The metal-insulator-semiconductor device according to Claim 40, wherein said source region comprises a semiconductor of a first conductive type.

44. (New) The metal-insulator-semiconductor device according to Claim 40, further comprising a second drain region disposed on a second surface of said first drain region, wherein said second surface is opposite said first surface.

45. (New) The metal-insulator-semiconductor device according to Claim 44, wherein said second drain region comprises a semiconductor of a first conductive type semiconductor.

46. (New) A metal-insulator-semiconductor device comprising:
a first drain region;
a body region disposed above said first drain region;
a gate region extending through said body region and partially into said first drain region;
a source region disposed between a first portion of said body region and a first portion of said gate region;
a silicon dioxide layer disposed between said source region and said first portion of said gate region, between a second portion of said body region and a second portion of said gate

Appl. No. 09/927,520
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

region and between a first portion of said first drain region and a third portion of said gate region, wherein said silicon dioxide layer has a first thickness; and

an insulative layer, selected from a group of material consisting of phosphosilicate glass and borophosphosilicate glass, disposed between a second portion of said first drain region and a fourth portion of said gate region and coupled to said silicon dioxide layer, wherein said insulative layer has a second thickness that is greater than said first thickness.

47. (New) The metal-insulator-semiconductor device according to Claim 46, wherein said first drain region comprises a lightly n doped semiconductor.

48. (New) The metal-insulator-semiconductor device according to Claim 47, wherein said body region comprises a p-doped semiconductor.

49. (New) The metal-insulator-semiconductor device according to Claim 48, wherein said source region comprises a heavily n-doped semiconductor.

50. (New) The metal-insulator-semiconductor device according to Claim 49, further comprising a second drain region disposed below said first drain region.

51. (New) The metal-insulator-semiconductor device according to Claim 50, wherein said second drain region comprises a heavily n-doped semiconductor.

Appl. No. 09/927,320
Amdt. Dated March 4, 2004
Reply to Office Action of November 11, 2003

52. (New) The metal-insulator-semiconductor device according to Claim 51, wherein said gate region comprises polysilicon.

53. (New) The metal-insulator-semiconductor device according to Claim 52, further comprising an n-doped semiconductor region disposed in said first drain region adjacent said fourth portion of said gate region.

54. (New) The metal-insulator-semiconductor device according to Claim 46, wherein a thickness of said insulative layer is in the range of approximately 0.1 to 0.3 μm .

55. (New) The metal-insulator-semiconductor device according to Claim 54, wherein said insulative region does not introduce substantial stress in said drain region.

56. (New) The metal-insulator-semiconductor device according to Claim 54, wherein a thickness of said silicon dioxide layer is in the range of approximately 100-1000 Å.